

*The* **TEXACO STAR**



**OCTOBER 1930**



INSPECTION AND REPAIR  
OF TEXACO TANK CARS—  
VIEW OF CAR SHOPS  
AT PORT ARTHUR WORKS



# The TEXACO STAR

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OCTOBER, 1930

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## Brief and to the Point

★ The petroleum industry gained one-eighth in size last year and the value of its assets increased more than one billion dollars, according to a recent survey made by the *National Petroleum News*.



★ Many of the famous Roman roads are surfaced with stone set in a binder of asphalt.

★ After ten years of drilling for oil in New Jersey at a cost, according to the *New York Times*, of three million dollars, an engineering firm has definitely abandoned its attempt to locate petroleum there in commercial quantities. One of the holes is said to be more than five thousand feet deep.

★ One thousand delegates, representing fifty countries, will attend the sixth International Road Congress to be held in Washington, D. C., October 6 to 11.

★ Mexico produced 3,436,516 barrels of oil during the month of July, an average of 110,855 barrels a day.

★ An evening course on the Diesel engine is announced for the seventh consecutive year by the Brooklyn Polytechnic Institute, Brooklyn, New York. The term began September 30, and the course deals with recent work in building Diesels for locomotives, automobiles and airplanes. The course is open to the general public and there are no prerequisites.

★ Expenditures throughout the country for public works during the first half of 1930 were twelve per cent higher than the amount spent in the first half of 1929.

★ The average automobile, including passenger cars and trucks, consumes about one gallon of motor oil to every 27.32 gallons of gasoline.

★ There is a growing demand for colored gasoline in Germany.

★ Two metal-bottomed ferries have been anchored at opposite sides of a bay in California because it was found that immersed in the salt water, they formed a giant electric cell when berthed together and this caused corrosion of the hulls.

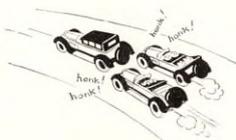
★ Some of the TEXACO Asphalt jobs completed during the month of July include nineteen miles of sand asphalt highway in North Carolina; 94 miles of surface treatment on the Old Spanish Trail in Texas; 75,000 square yards of penetration macadam and bitulithic constructed on the Boston (Massachusetts) airport and 60,000 square yards of black base in Colorado Springs, Colorado.

★ The practice of increasing the recovery of oil from a well by forcing gas through oil sands, commonly known as gas lift, was begun in 1911 in the State of Ohio.

★ Indiana collected nearly two million dollars more in gasoline taxes during the first half of 1930 than during the corresponding period of 1929.

★ A valuable addition to the oil man's library is "The Function of Natural Gas in the Production of Oil," published by the American Petroleum Institute.

★ In 1797 oil skimmed from Oil Creek, Pennsylvania, by Indians was sold as medicine for sixteen dollars a gallon.



★ The New York Automobile Club recently asked some 21,000 metropolitan motorists what they considered the worst motoring sin that drivers are guilty of. Thirty-eight per cent voted as most objectionable the driver who insists on keeping to the middle of the road.

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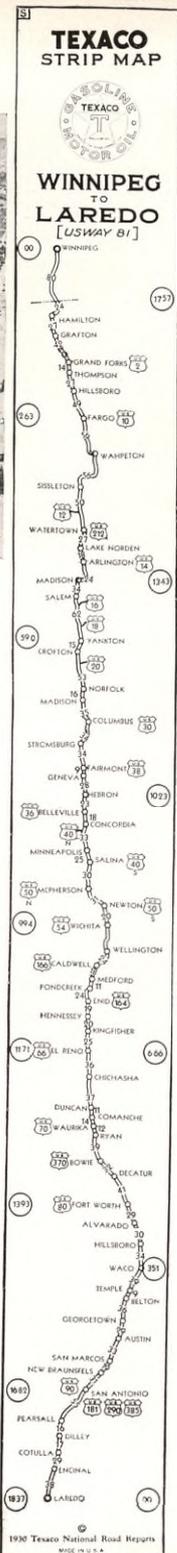


## Introducing the

**T**EXACO Strip Maps, showing automobile routes between all principal American cities on United States numbered highways are now available to the touring public. This is the first time that any organization has distributed maps of this type on a national scale.

The Texaco Strip Map is a strip of paper 36 inches long and two and one-half inches wide, upon which is printed a United States highway route, showing principal cities encountered on the way and, at intervals, the mileage from the starting point in both directions. On the reverse side of the strip are printed detailed directions as to the road conditions and road surfaces to be found all along that particular route. In addition there is a tabulation of speed limits in the various states passed through, the amount of the gasoline tax in each state, and sundry helpful driving hints. The lists of road conditions are brought up-to-date every three months, the Texaco National Road Reports office having been enabled to do this through the cooperation of the various state highway departments.

The new maps are an outgrowth of the regular Texaco National Road Reports service which includes the distri-



EWING GALLOWAY PHOTO

## Texaco Strip Map

bution of state maps, showing all automobile highways, and the printing of road reports in weekly automobile sections of newspapers throughout the United States.

The strip maps were designed by the Texaco National Road Reports office. Instead of having to carry five or six bulky state maps the motorist may now obtain one of two of these strip maps showing his entire route from start to finish. Because of the nature of the strip map, any road conditions not indicated on the reverse side may be pencilled on the face of the map. In addition, a brief note is sent calling attention to any peculiarities of the route he intends to take and to the fact that large state maps are available at TEXACO service stations which, incidentally, are never more than one hour apart on any of the United States numbered highways.

Although other organizations are distributing strip maps, these are the only ones which cover a complete network of United States highways. Furthermore, no other strip maps carry a description of road conditions. The new maps are available at the offices of the Texaco National Road Reports, 135 East 42nd Street, New York City.



Hawley and the Official Car at the End of the Record-Breaking Trip

## "In Too Big a Hurry to Take Chances"

*"Stu" Hawley Establishes New Transcontinental Automobile Records*

WITHIN a week after Captain Frank Hawks established new coast to coast records by air, "Stu" Hawley, director of The Texas Company's Texaco National Road Reports Office, set a new east-west and return record by automobile. Hawley made the round trip in two and one-half hours less than six days, elapsed time.

The trip from New York to Los Angeles, was made in 67 hours, 38 minutes, while the return journey was accomplished in 69 hours, twenty minutes. This is approximately seventeen hours faster than the fastest train time. Average speed for the west-bound trip was 45.32 miles an hour and for the return trip 44.22 miles an hour. Hawley did not leave the car except for about four hours at Los Angeles, but took on local pilots in congested districts.

For several months inquiries had been coming into the office of Texaco National Road Reports regarding the fastest possible time in which a motorist could travel between the Atlantic and the Pacific. Hawley, collaborating with newspaper correspondents who print the weekly road reports, developed the following route, showing the approximate distance and time required to traverse each section: Usway 22, in New Jersey, 72 miles in 1.30 hours; Usways 22, 11, 30 and 22 in Pennsylvania, 333 miles in 8.45 hours; Usway 22 in West Virginia,

nine miles in .26 hours; Usways 22 and 40 in Ohio, 257 miles in 5.71 hours; Usway 40 in Indiana, 150 miles in 2.50 hours; Usway 40 in Illinois, 160 miles in 3.55 hours; Usway 40 in Missouri, 259 miles in 5.13 hours; Usways 50, 54 and Kansas 45 in Kansas, 484 miles in 8.06 hours; Usway 54 in Oklahoma, 60 miles in 1.35 hours; Usway 54 in Texas, 103 miles in 2.30 hours; Usways 54, 470 and 66 in New Mexico, 473 miles in 10.51 hours; Usway 66 in Arizona, 391 miles in 11.15 hours; Usway 66 in California, 307 miles in 6.82 hours. This made a total of 3066 miles which apparently could be traversed in 67.64 hours.

Although in theory this route seemed perfectly feasible, some doubt was expressed as to whether the trip could actually be made in that time. Hawley volunteered to give it a trial in his new Buick eight-cylinder 31-66S coupe. Representatives of newspapers printing the weekly Texaco National Road Reports arranged for motor patrols through heavy traffic and then a schedule as exacting and inflexible as that of a railroad was drawn up. Particular attention was paid to the problem of passing through congested districts and to court decisions on the legal speed limit, interpreting this as "being able to bring the car to a full stop in the clear space ahead during daylight or within the space illuminated by the headlights at night." Naturally

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Hawley's route was designed to take him through sections which are not heavily traveled at night and arrangements were made to service the car at definite points along the way with TEXACO Ethyl Gasoline and the new TEXACO Golden Motor Oil. Hawley climbed into his car in New York City at midnight, August 14, and one minute later was streaking through Gotham's traffic toward the Holland Vehicular tunnel.

Hawley was driving a regular stock car, the first Buick delivered in the United States this year, selected as it came off the assembly line at the factory. There were no special attachments on the engine or on the car itself. On the west bound trip he struck rain through the Allegheny mountains, on the detour between Cadiz and Morristown, Ohio and between Ottawa and Newton, Kansas. In Kansas Hawley struck the first rain which had visited that region in seven weeks.

Near Ottawa, Kansas, he came upon what appeared to be an unsurmountable obstacle; a large truck stalled in the middle of the highway with cars lined up in front of and behind it for a distance of nearly two miles. The ditch on each side of the road was filled with water but "Stu" boldly swung his car into the ditch and drove around the obstruction, knowing that black soil, or adobe, even when in a semi-liquid condition, can be driven over safely. He arrived in Los Angeles at 4.39 p. m. August 16, exactly on schedule.

Hawley left the car for the first time at Los

Angeles, attended a business conference, made a complete toilet and ate a hot meal while his car was being thoroughly checked by officials of the Buick Company. No trouble was found; the oil was changed, the car was thoroughly greased and at 9.25 p. m. Hawley was on his way back to New York.

On the return trip Hawley encountered muddy roads practically all the way from Santa Rosa, New Mexico, to Kansas City, Missouri. His personal slogan is "I'm in too big a hurry to take chances;" consequently he drove at a slower rate, arriving in New York City at 9.45 p.m. on the 19th. An accurate check on the time of his arrivals and departures was maintained by R. L. Powell and H. E. Parker of the Western Union Telegraph Company.

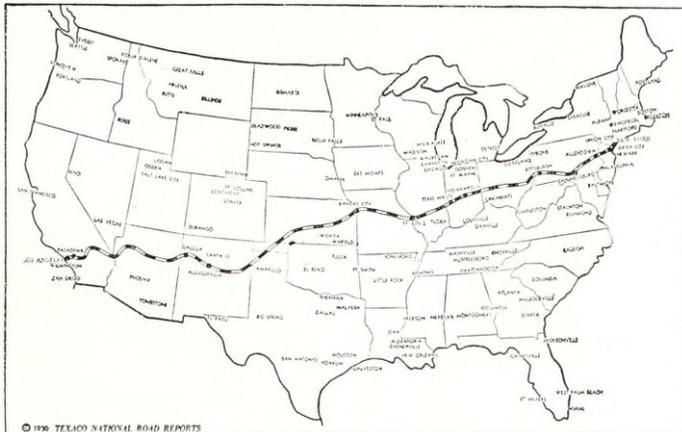
Temperatures ranging from 52 degrees Fahrenheit to 124 degrees Fahrenheit were encountered each way. The average temperature during the day was 83 degrees, while at night it was 70 degrees. "Stu" telegraphed ahead for his food at various points and his diet throughout the trip consisted of unjointed fried chicken, ripe olives, graham crackers and plenty of black coffee. He took no water, fruit or vegetables on the way and slept very little, dozing off only when the occasional local pilots were driving at a steady rate of speed.

"Anyone can duplicate the trip in the same driving time," said Hawley on his return, "but I do not recommend anyone's trying it in the same elapsed time unless he is used to very little sleep."



"Stu" Enjoys Driving

Hawley's Route, As Near a Straight Line as One Can Make by Automobile



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# Meeting the Mosquito on His Own Ground

*Many Thousand Gallons of Oil are Used Annually to Combat this Pest*

By THOMAS E. FRESTON, M. D.

Sanitary Engineer, Department of Health, New York City

FOR many centuries the mosquito has been regarded as an annoying pest, but it is only within the past fifty years that it has been definitely proved that this insect is a carrier of disease germs. Since that time civilized man has waged bitter and unrelenting warfare against the mosquito.

In ancient times the mosquito was responsible for many of the plagues which visited Egypt and Rome. In the archives of the former country it is recorded that the insects abounded in such prodigious numbers that inhabitants of marshy regions were forced to build towers in which to sleep. Mosquito netting was a familiar traveling companion in the time of Caesar, and the army of Julian, the Apostate, was once so fiercely attacked by a swarm of mosquitoes as to be driven back. There are accounts in Greek history of inhabitants of whole cities being driven from their homes by the insects. Spenser, English writer of the Seventeenth Century, says that the Irish mosquitoes "doe more to annoy the naked rebels and doe more sharply wound them, than all the enemies' swords and speares."

The first large-scale mosquito control was carried on by the United States in building the Panama Canal. During the Spanish-American War malaria and yellow fever had cost more lives than the enemy's bullets

and mosquitoes were rightfully held to account for it. Thus it was that this great peace-time project was carried through to a successful conclusion principally because of the improved sanitation methods. With human lives at stake, science was quick to find a solution to the problem. When the World War broke out, even though many American training camps were in the so-called malaria belts, mosquito breeding was so well controlled that the disease was never prevalent enough to prove a serious factor.

Our problem in New York City is a particularly serious one, not only because the city is so large but also because the metropolitan area is surrounded by some 23,250 acres of salt marsh. In addition, in the city proper there are miles of conduits, subway and building excavations, and hundreds of manholes, park pools, defective drains and roof tanks which offer ideal conditions for the breeding of mosquitoes.

Mosquitoes breed in water and in water only. They never breed in fresh water, but always in some pool which is either salty or stagnant. Consequently to exterminate the mosquito it is necessary only to destroy or pollute his breeding place. This may be accomplished in three ways: by draining off the stagnant pools or salt



*Digging Ditches to Drain Water  
From New York's Salt Marshes*



(Above) Spreading Oil to Smother the Mosquito Larvae



(Left) Gathering a Few Larvae Samples for the Laboratory

marshes, by filling in these places with earth, or by pouring oil over the pools in cases where the first two methods may not be practicably carried out.

Under the leadership of Health Commissioner Shirley W. Wynne, this protective health work has been given its greatest impetus. The City of New York, at the instance of Health Commissioner Wynne, spends approximately one hundred thousand dollars a year on mosquito control and at the present time operates one of the best equipped mosquito fighting units in the United States. So success-

ful has been the work that it is safe to say that conditions in New York are far better than those in the average American seaboard city.

More than eight million feet of ditches have been constructed among the salt marshes near the city to carry off the water which accumulates after a high tide. These ditches are from ten to forty inches wide and must be dug with clean-cut, perpendicular sides to a depth of about thirty inches. Nature comes to our assistance to a certain extent in these areas by sending in with each change of the tide large



Another View of Oil Spreading Operation  
(Above) and Clearing a Path for the Ditch

swarms of killfish, a natural enemy of the mosquito. These fish devour all larvae remaining in the ditches themselves.

Certain bad mosquito breeding grounds in the city may be eliminated by filling in. This course is available in the case of shallow, stagnant bodies of water in densely populated sections. Often this filled land is converted into valuable building sites.

Up to September 1 this year, New York City had used more than 35,000 gallons of oil in mosquito control. The average amount used is about 50,000 gallons a year. This oil is generally a low grade of fuel oil and recent experiments have shown that crankcase drainings may be used with excellent results.

The theory of the oil-



ing method, introduced in 1896, is to cut off the air supply of the mosquito larva. To understand that it may be necessary to sketch briefly the life cycle of the average mosquito:

It is not generally known that there are many different varieties of mosquito. A few of these, to give them their formal Latin names, are: *Anopheles*, which carries the germ of malaria; *Stegomyia*, whose specialty is spreading yellow fever; *Culex*, which is the type most commonly found in your bedroom on a hot summer night, and *Aedes*, which confines its activities to the garden or the front lawn. Each of these groups may be subdivided into minor groups and each has its own set of markings, characteristics and habits. Now

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the adult, female mosquito, when ready to lay her eggs, starts on a search for a convenient rain barrel, salt marsh or stagnant pool. Having found one, she deposits the eggs in small, black masses of from fifty to four hundred each, which float on the surface of the water like a tiny raft. Under the proper conditions these eggs hatch into "wrigglers," which feed on organic matter in the water and obtain air by sticking their tails above the surface. In from six days to three weeks this larva wriggler becomes a pupa, which has a large head, a curly tail and looks like nothing so much as an animated comma. From 24 to 72 hours later the skin of the pupa cracks and the adult mosquito emerges to take his unrightful place in the world.

Naturally it is only in the breeding places that mosquito control can be carried on successfully, since one thousand larvae can be killed with the same effort and expense that it takes to kill a single insect on the wing.

Mosquito control is one use of petroleum which

calls for the lowest grade of oil possible, since the oil should contain considerable toxic matter. For this purpose the fuel oil or crankcase drainings is usually mixed with a cheap grade of gasoline or kerosene. The oil is transported in tank trucks and sprayed on the water through a hose by means of a pump connected with the engine in the truck.

When the oil is poured on the pool, it forms a thick film on the surface, through which the mosquito larvae cannot penetrate to obtain air. Furthermore, if the oil contains toxic matter, the larvae are poisoned in their attempts to break through the film. The oil which we use generally kills all larvae in from thirty minutes to an hour. In warm weather this oiling must be done every ten days or two weeks.

The Department of Health of the City of New York maintains a yearly force of about sixty men to carry on the work of fighting the mosquito. In the months between March and October, when breeding reaches its height, this force is increased to approximately three hun- (Continued on last page)



Close-Up of Oil Pump on  
Front of the Tank Truck

# Petroleum Coke

*Marked Advantages Are Found in This Solid Fuel Obtained from Oil*

By F. L. WALLACE

Second Assistant Superintendent, Port Arthur Works

**W**ITHIN the past few years industrial operators and householders alike have found a fuel of pronounced efficiency in petroleum coke, the solid residue formed by the destructive distillation of petroleum products. The Texas Company, which is using petroleum coke in many of its own refineries and power plants, is now marketing this product.

Petroleum coke has an extremely high heating value and a low ash content, seventy-five tons of the substance being equivalent in heating value to one hundred tons of the average run of mine coal. Moreover the product leaves less than one per cent ash by weight.

There are two general classes of petroleum coke: one made from residue oils under atmospheric pressure, generally called "coke still" coke, and the other produced in pressure or cracking equipment. Its appearance is similar to the coke made from coal in the conventional coke oven; it has the same porosity and it ranges in color from gray to black.

Carbon, in various combinations with other chemicals, is the principal constituent of practically all fuels. Petroleum coke is regarded as the purest form of industrial carbon available in large quantities. Due to its purity and its high percentage of fixed carbon it is adaptable to many uses as an oxidizing or reducing agent; it is used for making carbon electrodes, such as are used in electric furnaces, and it is also employed in the manufacture of calcium carbide, metal alloys and artificial gas, but its widest use is for domestic or industrial fuel.

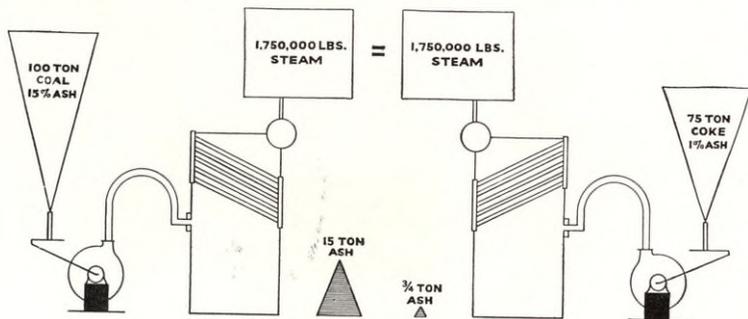
In the home, petroleum coke is usually burned

in egg-sized lumps, but for industrial purposes it is more often pulverized. It is in the pulverized form that the most exhaustive tests on petroleum coke have been conducted by The Texas Company at its Port Arthur Works, Port Arthur, Texas.

The coke when used as pulverized fuel is prepared by two different methods; the centralized system, where the coke is crushed, dried and pulverized at a central point and distributed to the various units of consumption, and the unit system where the coke is delivered to the units of consumption in lumps one and one-half inches in diameter and smaller. This crushed coke is fed into a unit mill which dries and pulverizes the fuel and delivers it to the furnace.

The first unit mill installation by The Texas Company was made in 1927 under a 524-horsepower boiler at the Company's Port Arthur Works. Seven additional mills have since been added to similar boilers which were originally fired by oil and four ball mills have been installed to fire four 640-horsepower boilers. The combined installation has a capacity of five hundred tons of pulverized fuel every 24 hours.

The equipment in this plant for burning pulverized petroleum coke differs very little from that used in firing coal in pulverized form. The raw coke is delivered to the boiler house in railway gondola cars and is unloaded into a 250-ton storage bin. Thence the coke is conveyed to intermediate bins at each of the twelve boilers. On its way to the boilers the coke travels over magnetic separators,



COMPARATIVE VALUES OF BITUMINOUS COAL AND PETROLEUM COKE



*Firing Aisle, Showing Ball Mills and Pipes for Pulverized Coke and Hot Air*

which remove all "tramp" iron, and then passes through a single roll crusher which reduces the lumps to about three-quarters of an inch in diameter. Only one operator is needed to deliver the coke from the main storage bin to the intermediate bins. After the prepared coke is delivered to the intermediate storage bins above the pulverizers, the operating fireman controls the feed into the mills and controls his fire in accordance with the steam demand in the same manner as he would if he were using any other fuel.

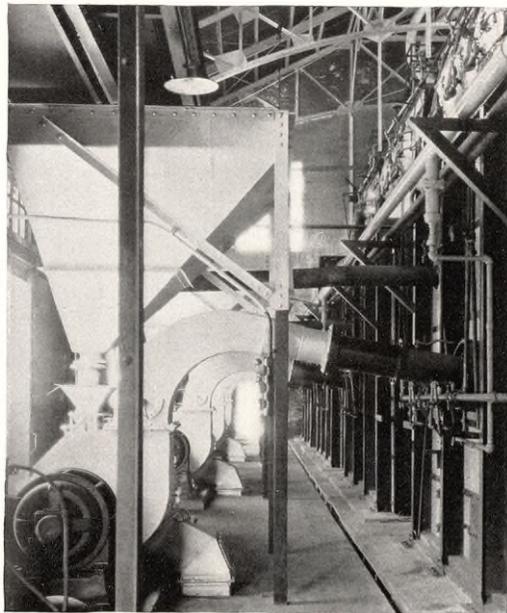
The coke, as it enters the mills, contains from two to fifteen per cent moisture, depending on the weather. In order to pulverize the coke properly, the moisture must be reduced and this is accomplished by the use of preheated carrier air in the mills. This air, which has been heated by being used to cool the walls of the furnace, or else by an extraction from the furnace gases, absorbs the moisture from the coke as it is ground and blows the coke into the furnace through horizontal turbulent burners. Secondary air, that is, air that is used

in actual combustion, is supplied after being heated by passing through the boiler settings, or walls of the furnace. Ignition takes place close to the burner tip and the temperature of the flame is somewhat higher than the flame of burning coal or gas.

Since petroleum coke leaves so little ash, it has not been necessary to provide ash pits under the furnaces. The last four boilers constructed for burning coke have been in continuous operation for six months, and the furnaces are quite free from ash or slag formation. Some "fly ash" is carried over through the boiler and breeching (the pipe from the boiler to the stack) but this condition is taken care of by extracting the ash from the last pass of the boiler and breeching with a fan.

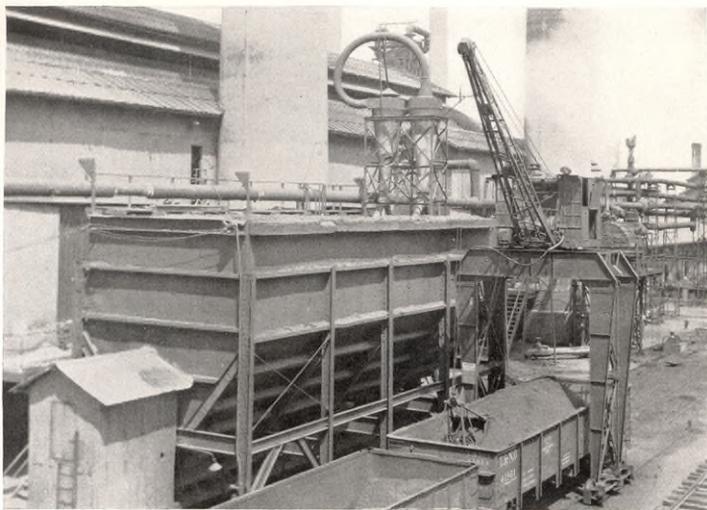
The dust collected in this way is returned to the main storage bin and mixed with the raw coke for refining. Thus whatever combustible material was carried over in the fly ash is to a large extent recovered.

Recent tests on burning pulverized coke under a battery of four boilers have shown



*Close-up of Impact Mill Installation, Showing Arrangement of Overhead Conveyors, Coke Bin, Feeder, Burner Piping and Hot Air Ducts*

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Main Storage Bin: Note Cyclone Separators Above Bin for Returning Unburned Fly Ash

conclusively that the same relative heat extraction can be obtained from petroleum coke as when burning coal, oil or gas. Average boiler and furnace efficiencies of from 77 to 80 per cent were obtained at various ratings. The power input required to grind the coke varied from fifteen kilowatt hours to 25 kilowatt hours to the ton, depending on the quality of coke handled. The best results were obtained by carrying the carbon dioxide of the flue gases between fourteen and fifteen per cent.

The coke as fed to the grinding mills averaged ten per cent moisture but after grinding and drying

with the preheated air this moisture content was reduced to .4 per cent.

Proximate analysis of the petroleum coke used in these tests on a dry basis was as follows: volatile combustible matter, 9.6 per cent; fixed carbon, 89.80 per cent; ash, .6 per cent; B. T. U. per pound, 15,000.

It will be noted that the percentage of volatile matter is between that of anthracite and bituminous coals. Any difficulty due to low volatility may be met either by grinding the coke finer or by using high temperature (Continued on Last Page)

Coke Preparation Plant, Where Lump and Egg Coke are Segregated



# The Ladies Take Up Trail Blazing

*Many Feminine Fortunes Are Being Made in West Texas Oil Fields*

By GRACE GADDIS

**I**N oil history the woman trail blazer is growing as common as the male pioneer. Where even fifteen years ago she would have been daunted by the hardships and sickened a bit by the squalor and unloveliness, the woman of today goes right along to the newest oil fields with her brother adventurers.

By the time the first strip of tar roofing is laid on the first hurriedly-built shack, she is on the scene, and she is playing the greatest of all games of chance with the same cleverness and serenity that the new woman plays every game with. More often than not she meets with the same respect and consideration from the men she comes in contact with in the fields that would be dealt her in an office or store "Back Yonder." This is due to her matter-of-fact acceptance of the whole scheme of things. She doesn't go in on tip-toe, poised for flight at the first hint of unpleasantness. She walks briskly in on the situation and spends practically all her waking hours minding her own business; which attitude usually prompts her associates to do likewise.

There have always been pioneer wives and mothers. But pioneer woman lease brokers, newspaper editors, who supervise drilling operations, who set up various businesses from eating houses to radio repair shops and prosper, women who gamble expertly with leases and oil lands and yet maintain a pleasant, womanly decorum always, are new.

They fight the game without the bulwark of any man's protection or favor. They have proved in the oil fields that their wit and cleverness are as effective and much more exciting weapons to use than the ancient ones of tears and cajolery.

Norma Hancock, former Vice-President of the Dixie Oil Company, is now head of her own company, with offices in San Antonio, Texas, and a director in various other enterprises. She is one city girl who came to the oil fields of the West and made good.

Miss Hancock was a stenographer in the offices of an oil company located near one of the fields which ten years ago was at its zenith. She absorbed considerable knowledge of the oil situation from her contacts in the office, but this was not enough. She grew restless. Her post behind a typewriter at a wide, littered desk was too remote. She wanted to get up to the front line of action. She resigned her position,

took the little money that she had saved and opened a store in the middle of the field where wells were in progress every hour of the day and night. All day long the roar of heavy machinery was in her ears. Dust from the rutted roads, sand from the brown, withered hills, tobacco juice, gas fumes and 29-gravity crude painted the picture of her days. Flares among the brush on the stark slopes, the blaring of scratchy phonograph music from the tin-roofed dance hall, loud voices and laughter assailed her nights. Yet she kept on, a quiet, pleasant girl who dispensed cans of pork and beans, strips of canvas, rat traps, talcum powder, bottled soda-pop, all the needs of a motley assortment of humanity assembled from the earth's four corners.

Men came into her store and wrote laborious, smeared letters home. Other men came and unrolled maps on the counter and puckered their brows and discussed with the interested storekeeper this or that location, the various phases of drilling. She learned to an inch the depth of every new well and the probable cost of drilling per foot. She learned materials and men and all the myriad kinks of production. Later she began dealing in leases and royalties in a modest way. Some explain her success by saying she "just struck it rich." Others know that luck was not the only ingredient of her success.

Another interesting woman pioneer in Texas oil fields is Annie Hillary Harrison, newspaper publisher, feature writer, poet and soldier of fortune. Miss Harrison was editing and publishing the *Wink Broadcaster* shortly after the Winkler oil field roared into existence. By day she garnered the news—and there was plenty of it—sold advertising, wrote peppery editorials for her paper. At night she discreetly closed up her improvised newspaper plant and went to another town to sleep. For even this intrepid young woman did not dare stay in Wink after dark during those first hectic months of its existence.

After a time she was so rushed with work and so weary at the end of the day that she decided to spend her nights in Wink, after a rooming house or so had been built. Several times in the night she was awakened by raids being made by officers upon the place where she slept, but she stayed. She liked it all. Everybody was busy. Everybody was accomplishing something. Success was in the air. The plan

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of empire building was being unfolded day by day before her very eyes. Adventure was in her blood, her pulses drummed happily with excitement. Nothing was the same today as it was yesterday. Nothing would be the same tomorrow. Fortunes shifted overnight. Towns sprang up like mushrooms on land that theretofore offered no promise of any harvest except that of cactus and rattlers and lean coyotes.

Somehow during the busy years of oil field newspaper work, Miss Harrison has found time to write two books of verse. She has also sold features to other papers.

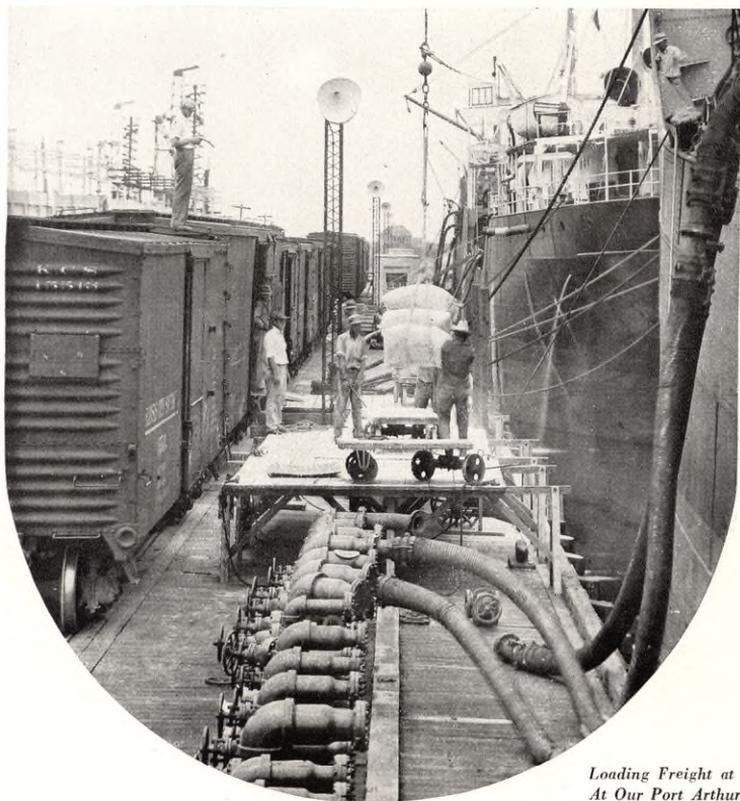
Another Southern girl whose career has been as spectacular as any ever observed in oil field circles is Ann Gordon, "The Royalty Queen of Texas," who is president of the Ann B. Gordon Oil Company, Incorporated.

Ten years ago this young woman left her home in Tennessee with a small sum of money that she had

made in real estate transactions. Had they known, Ann Gordon's hoop-skirted Southern grandmothers would have held up their silk-mittened hands in horror when Ann turned real estate agent.

Westward Ann came and continued in the real estate business in the "easy money" days of 1920. Thirty thousand dollars invested in the Van, Texas, oil fields, was the sum total of her achievements as a real estate operator which, in itself, is no mean success story. But her fortune was to grow with the amazing rapidity of an Alice in Wonderland. Production on her holdings in the Van field is estimated at from ten thousand to fifty thousand barrels daily. Now she is preparing to develop her holdings in the new fields of New Mexico.

Luck has probably played a part in the success of these modern woman trail blazers, but pluck has had the leading rôle, supported by character and clever, cool wit.



*Loading Freight at Ship Side  
At Our Port Arthur Terminal*



(Above and on Opposite Page) Panoramic View of Huntington Beach Field

## Oil Comes to Huntington Beach

*A Brief Review of the Development of this California Field*

By MARION A. SPEER

**I**N 1920 Huntington Beach, California, was a quiet little beach resort town, beautifully laid out with paved streets, shade trees and comfortable homes. Its inhabitants led an existence whose even tenor was interrupted only by the transient flow of visitors during the summer season.

In May of that year one of the major oil companies brought in a small well near the subdivided limits of the town. Six months later added interest in the field was created by the completion of a well which produced two thousand barrels of oil a day.

Up to this time no commercial production had been developed so near the coastline of the Los Angeles Basin. Oil was being produced principally among the low, rolling foothills along the west side of the Santa Ana and San Gabriel mountains. Town lot drilling in Huntington Beach began and large bonuses were paid for small drilling tracts. Most of these tracts were fifty by 120 feet, scarcely large enough for a derrick, sump hole and storage tanks.

On July 12, 1923, the maximum production of the Huntington Beach field was reached. At that time 199 wells were produc-

ing 127,163 barrels daily, an average of 639 barrels per well. On this date it was estimated that 30,000 barrels of the potential production was restricted.

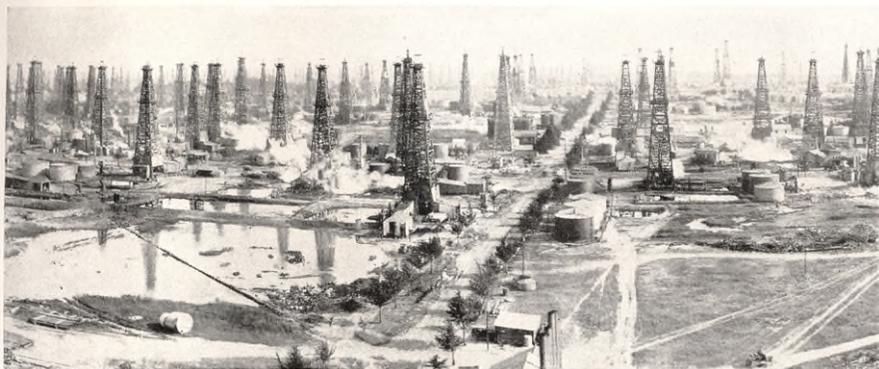
Early in 1926 the western section of Huntington Beach was opened for drilling. An exclusive residential section of the city, it was literally put on wheels and moved to other towns and nearby subdivisions; many houses were moved while they were still occupied. A fifty-thousand-dollar apartment building was moved away to make room for a single drilling site. Thirty days after the first well was brought in, a hundred derricks graced the skyline of Huntington Beach and many others were in all stages of completion. The new development was along the ocean side and underground conditions indicate that the axis of the structure is under the Pacific Ocean, a short distance from the shore.

The peak of production from this new development was reached in December 1926, with 78 wells producing 63,400 barrels a day. Several wells came in at the rate of four thousand barrels a day while many were completed at 2500 barrels a day.



*Entrance to Our Property*

## The TEXACO STAR



Total production from the Huntington Beach field as of January 1, 1930 is estimated at 162,561,769 barrels, with a recovery of 59,113 barrels per acre, based upon an estimated proven acreage of 2750 acres. On that date there were 557 producing wells.

At the present time the potential production of the entire field is only 44,000 barrels a day, which amount has been restricted forty per cent by voluntary curtailment since March 1, 1930.

The Texas Company (California) has 22 producing leases in this field with a daily average production under curtailment of slightly more than 1500 barrels daily.

The city of Huntington Beach plays host to thousands of tourists during the summer season and the surrounding countryside is up to the usual high standard for California scenery. The view from the city takes in Long Beach, with its tall buildings, and

Signal Hill, with its hundreds of derricks looking like giant pins sticking in a round cushion. Twenty-eight miles off shore is the bulky, purple outline of Catalina Island.

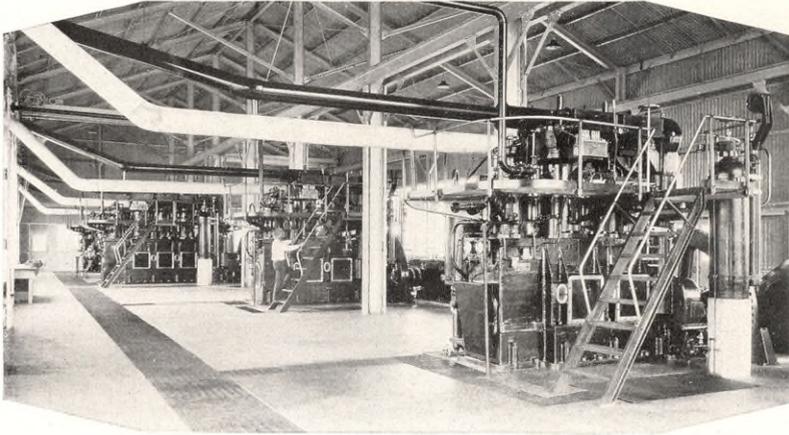
A few miles down the coast is Dana's Point, so named because Richard Henry Dana wrote of it in "Two Years Before the Mast."

Windjammers once anchored there in a peaceful cove near the cliffs while they were loaded with products from two miles inland. Hides, tallow, wine, and olives were brought down to the shore in the quaint *carretas*, drawn by oxen and manned by mission Indians. Today a million-dollar hotel is being built on Dana's Point, but an old mission still stands there as an interesting relic of Spanish California. The crumbling adobe walls are mellow with age but there still lingers the atmosphere of old Spain, the atmosphere of a day which never knew oil derricks.

*Huntington Beach High School; Part of the Field is Near By*



# ALONG THE WEST



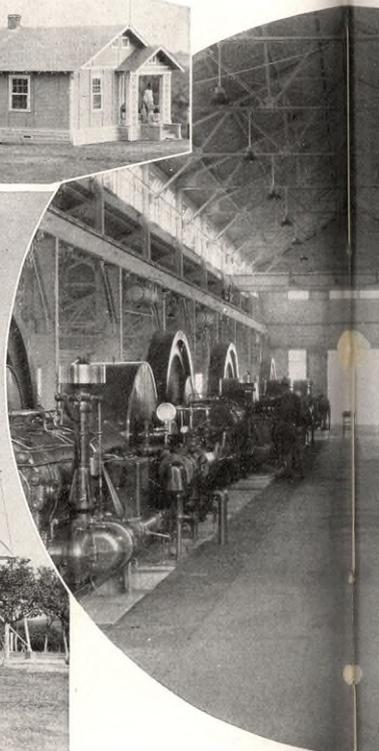
*This Line, (operated by the Texas Pipe Line Company) Runs from La Crosse, Mexico, to The Company's Refineries at Port Arthur, Texas. Its Capacity is 724,000 Barrels per Day.*

*(Left) View of Interior of Pump Room at Rosanky Station*

*Employee Cottages at New Ulm Station*



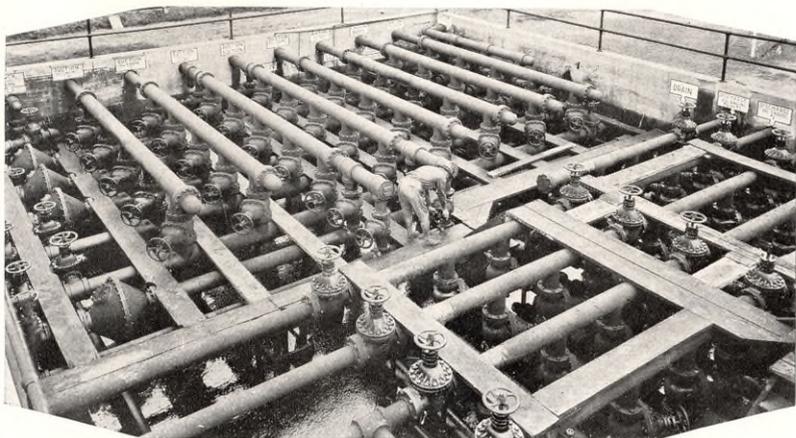
*Station Tank and Water Tower at Segovia Station*



*Upon the Smooth Operation of this Line Depends the Movement of the Oil*

# T TEXAS PIPE LINE

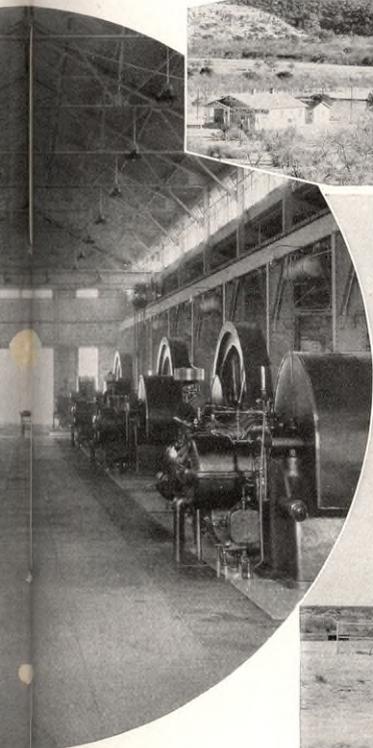
Operated by The  
 Pipe Line Company,  
 Lea County, New  
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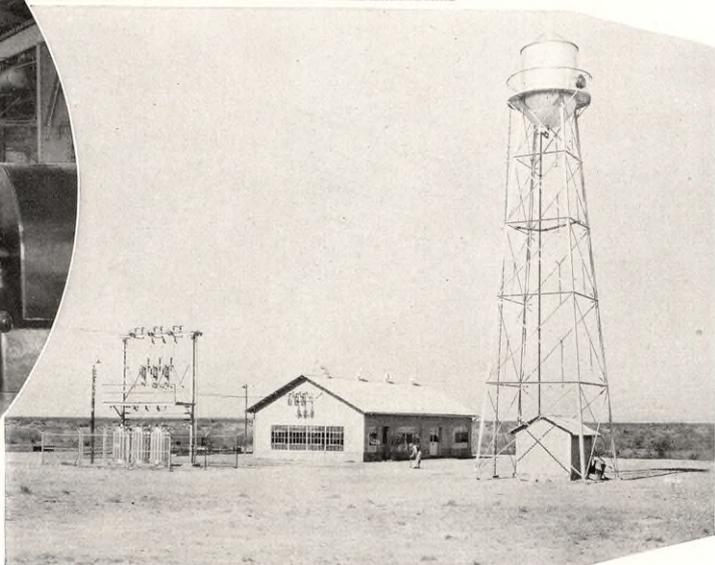
(Right) Showing the  
 Intricacies of a Pipe  
 Line Manifold



General View  
 of the Junction  
 Station



Detail of These Pumping Units  
 at Oil-Sour Lake Station



Pump House, Transformer and Tower; Crane Station

## The TEXACO STAR

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★

## Records

Two rather unusual tests of TEXACO products took place during the past month: "Stu" Hawley, director of the Texaco National Road Reports office, established new speed records for transcontinental automobile travel in both directions, bettering the former record, held by "Cannon Ball" Baker, by fifteen hours; and two young men from St. Louis, Missouri, succeeded in driving from New York City to Los Angeles and back in reverse gear.

Both Hawley and the "Back Up Boys" were using regular stock models, fueled and lubricated with TEXACO Ethyl Gasoline and the new TEXACO Golden Motor Oil. Both feats are outstanding proof not only of the superiority of these petroleum products but also of the heights reached by modern automobile design.

Present-day motoring comfort has been achieved by the close cooperation which exists between refinery experts and automotive engineers. As fast as new and improved machines have been developed, better fuel and lubricants have been manufactured to operate them. The American motorist is today getting the best in engineering talent and refinery skill at a price far lower than those obtaining anywhere else in the world.

## Safety in the Air

The death rate for aviation passengers was one for every five thousand persons carried on scheduled air lines from January 1927 to March 1930, according to statistics recently issued by the Actuarial Society of America. Safety in an airplane increases by 63 per cent after the pilot of the plane has had four hundred or more hours in the air, according to the Society.

The statistics, based on a report of a committee made up of prominent life insurance officials, reveal that last year the death rate among pilots holding transport licenses was 79 in one thousand for those who had less than four hundred hours of flying but only 29 in one thousand for those whose flying experience exceeded four hundred hours.

Although flying is still approximately two hundred times more dangerous than traveling by railroad, the

report adds that "travel by airplane is becoming safer because the death rate among passengers is gradually decreasing and a great degree of safety is possible where planes are piloted by fliers with considerable experience in the air."

## Lubrication

To the average person lubrication means the "oiling" of a machine to reduce friction. Few realize the extent to which modern civilization is dependent upon the output of the world's petroleum refineries.

If the world were suddenly cut off from its supply of lubricating oils, our wonderful machines would grind themselves into scrap within a few hours. Transportation would be at a standstill, industrial output would cease and the large-scale production of foodstuffs would be impossible.

There are many fuels, but so far there has been developed no practical substitute for petroleum lubricating oils. Thus it is that engineers of The Texas Company have devoted a great part of their time to the production of industrial lubricants. The phrase "TEXACO lubricated" has become a synonym for silent, efficient, economical operation of machinery. The world's great industrial plants can generate steam or electricity from coal, fuel oil or coke, but even if they obtained their power from the explosion of atoms they would still need good lubricants to keep the machinery going.

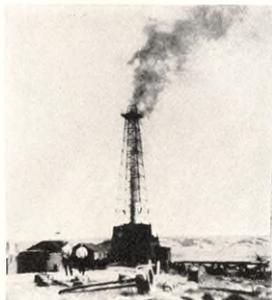
## Discontent

"The only kind of discontent I try to stir up is discontent with one's self," says William Feather, editor of the *National Fuel* magazine, in a recent issue of that interesting little publication. "What we all need is self-criticism.

"The wise youth," he goes on, "takes a look at himself occasionally and tries to see his faults. Instead of 'What's wrong with this country?' he says, 'What's wrong with me? I'm lazy, extravagant, ill-tempered, and a little stupid.'

"Having made this healthy confession, he is able to do something for himself. He can now make an honest check of his achievements. Did he fail to get a promotion because he was unlucky; or was he indifferent, disorderly, and undependable? Is he an economic misfit because he is a poet or is he plain dull?

"These questions are easily answered by anyone who is honest and desires to improve. We all know ourselves better than anyone else, but not



A LITTLE out of the beaten path for oil production by The Texas Company is our State No. 1, at Alkali Butte, Wyoming, sixteen miles southeast of the town of Riverton. This well was completed flowing 12,500,000 cubic feet of gas with a shut-in pressure of 1910 pounds to the square inch and spraying from twenty to thirty barrels of 31-gravity crude daily from the Dakota sand which was stopped at 4381 feet.

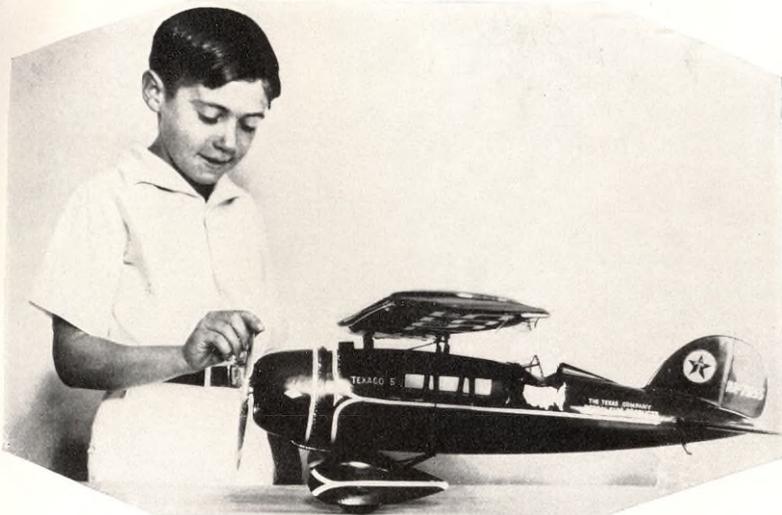
EVEN aviators may sometimes be mistaken for plain, ordinary citizens. One day last week Captain Frank Hawks, Superintendent of the Company's Aviation Division, drove his car to a nearby airport and upon alighting was asked by one of the attendants if he didn't want to buy a short ride over the field.

SOME of our readers have favored us with suggestions as to what they would like to see in future issues of THE TEXACO STAR and we are planning our schedules accordingly. Sometimes it takes a little research to dig up a really good story; so don't think we have forgotten you if your suggestion doesn't appear within a month or two. There have been many requests for more stories of the early oil days and every effort is being made to unearth new data concerning petroleum's infancy.

many of us dare tell ourselves the truth.

"I like these people who are healthily discontented. They have alert minds. They are good companions. They are alive.

"But, sad to say, those who need the purge of self-criticism are usually so stupid or so egotistical that they can't tell themselves anything. So they go on with the same old bluff, the same old follies, and the same old discontent with the rest of the world."



*A Youthful Aviation Enthusiast Examines the Model*

## "Texaco 5" Goes to the Smithsonian

*Scale Model of a Former Record Holder is Sent to Washington*

A SCALE model of The Texas Company's Lockheed airplane *Texaco 5* has been donated to the Smithsonian Institution in Washington, D. C. The *Texaco 5* is the plane in which Captain Frank M. Hawks, Superintendent of the Company's Aviation Division, made his first record-breaking coast-to-coast and return flights in 1929.

Some months ago the Smithsonian requested a model of the plane. Preparations for building the model were made, the builder following the engineering blueprints of the original ship.

The model is a perfect representation, on a scale of one inch to a foot, and even contains a tiny electric motor which turns the propeller. Its overall length is approximately forty inches and it has a wingspread of fifty inches. Inside the miniature cockpit is the "stick" and other controls, while the famous instrument board, one of the most complete and effi-

cient ever installed in a plane up to that time, has been faithfully reproduced. The front cockpit, reconstructed to hold gasoline, has been modeled just as Hawks designed it in the original ship. The little plane is painted a brilliant red and of course bears the name and trade mark of The Texas Company.

The *Texaco 5* came into nationwide prominence in June 1929 when, piloted by Captain Hawks, it established east-west and west-east speed records of eighteen hours, 21 minutes, and seventeen hours, 39 minutes respectively. These records stood until early this year when Colonel and Mrs. Charles A. Lindbergh made a west-east flight in fourteen hours, 45 minutes and 32 seconds. Captain Hawks regained

the speed title last August when, flying the *Texaco No. 13* he made the east-west flight in fourteen hours, fifty minutes and 43 seconds, and the west-east trip in twelve hours, 25 minutes and three seconds.

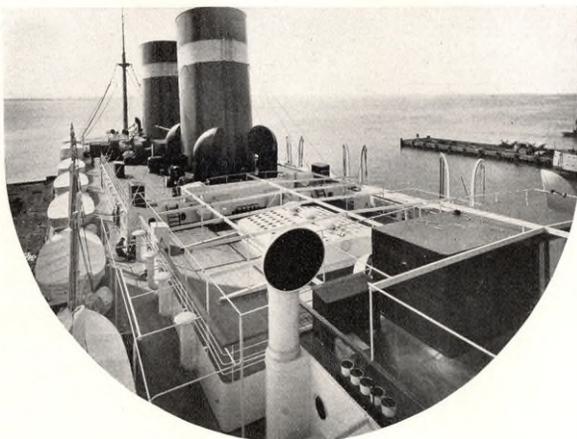
*The Original "Texaco 5" As it Looked Last Year*



# This Business of Lubrication

*Some Non-Technical  
Notes on an  
Important Subject*

By A. F. BREWER  
Engineer, Technical Division,  
Refining Department



*Good Lubricants Play an Important  
Rôle in Marine Engine Operation*

THE application of engineering skill to the production and operation of devices which play all-important rôles in our daily lives has led to a steadily growing interest in machinery and things mechanical. There was a time when the lawn mower, the baby carriage and the wheel barrow constituted the boundaries of the average man's idea of mechanics. Anything more intricate was regarded as something quite too complicated to worry about, which was attended to by an overalled person with an oil can.

The coming of the automobile brought about a marked change in these conditions. Nowadays most motor car owners can discuss intelligently problems of maintenance and operation, but it took agonizing hours spent under balky machines on roads several miles from the "nearest" garage to make the layman realize that it might be to his advantage to know a spark plug from a carburetor.

Extensive as man's present-day knowledge of engineering matters is, few people know what really enables these marvelous machines of ours to run for such a long time without wearing out. It should be realized that lubrication, or the science of reducing friction, is an all-important factor in the development of modern mechanical devices, from sewing machines to steam turbo-generators.

Friction may be defined as that force which occurs between the points or surfaces of contact of two bodies to resist their sliding over each other. When an attempt is made to overcome this resistance, frictional heat is developed. Technically, frictional heat is the result of energy expended as

work in the overcoming of frictional resistance and keeping the surfaces in motion with respect to one another. Unless this resistance is overcome an unnecessarily large amount of power will be required to maintain the respective parts in motion. Continued movement of this nature will cause such a generation of heat between the rubbing surfaces that either or both may be softened sufficiently to stick to one another, with the result that the clearance space between them will be filled up and they will "seize," as the engineer expresses it. They may even melt together, resulting in the tearing away of metal, if the force is sufficient. A familiar example of this is the "seizing" of the pistons in the cylinders of our automobile engines, or the "burning out" of bearings when not lubricated sufficiently.

In brief, lubrication is the means by which friction is reduced and the generation of excessive heat between any two surfaces in motion is prevented. The function of lubrication is to interpose a separating film of lubricant between these surfaces. Inasmuch as the lubricant is nearly always a fluid oil or semi-solid grease, what is actually done is to convert solid friction into fluid friction by keeping the solid surfaces separated with the lubricating film. This film must be thick enough to prevent actual contact between any parts of the surfaces, yet not so viscous as to set up friction between the particles of lubricant composing this film; otherwise its purpose would be defeated. It should not be thought that lubrication wholly eliminates friction; it simply supplants the more intensive solid friction with the fluid variety. Between sliding sur-

## The TEXACO STAR

faces the results will be far more marked than between rolling bodies.

The degree to which "perfect lubrication," or the reduction of frictional resistance to a practical minimum, is attainable will depend upon the suitability of the lubricant. Thus the problem before us



*From a Lawn Mower to a Power Plant,  
TEXACO Performs its Efficient Task*

today, whatever machinery we may have to deal with, is to select our lubricants with the view that their characteristics will meet the operating conditions involved. To aid us in this respect the automotive and oil industries frequently issue valuable information regarding the grades of oils and greases to use on motor cars. Evidence of the results of neglected lubrication can be seen in every junk-yard in the country. There is no palpable reason for wear occurring to the extent that it often does on many pieces of machinery; lubrication of the proper kind would have forestalled it.

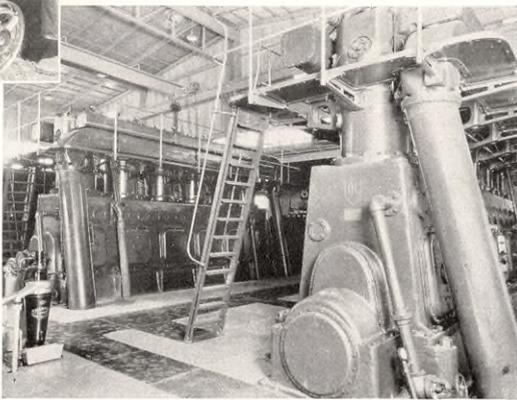
In addition to needless waste of power there is the matter of time lost through improper lubrication. This is best exemplified by a little incident which occurred not so long ago on a well-known railroad. The train had stopped, the crew was out, and passengers had already become aware of the fact that

this was not precisely according to the time table.

"Another hour lost," testily exclaimed one impatient business man, as he snapped his watch and angrily strode off to find the conductor. "This time it's a hot box; the last trip we were troubled with driving journal maladies. It's a wonder these people wouldn't pay a little attention to lubrication."

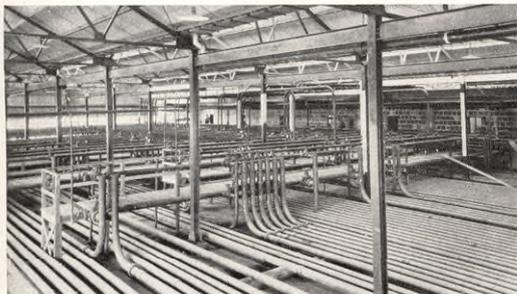
And this was only one case of a train's being delayed on account of faulty lubrication. Were not the lubricating engineers of every reputable oil company working hand in hand with the operating departments of those railroads which have come to appreciate the importance of lubrication, the above incident might be an hourly occurrence.

No factor in railroad operation plays so im-



portant a part in keeping trains on schedule as lubrication. It is one of the few variables in train operation that cannot constantly be watched by the locomotive engineer. Fuel, water, steam pressure and signals, all are within his range of vision throughout his run. But the rate of lubrication of car wheel journals, driving journals and the locomotive mechanism can only be inspected during stops. It is therefore evident that railroad lubricants and lubricating systems must be as fool-proof and effective as possible, in order that the engineer may depend upon them implicitly.

To sum up, our time, our comfort, the necessities we use in our daily life and even our pleasures, are dependent upon lubrication for their expedition. The automobile and steam train are only outstanding examples. We could quote endlessly regarding (Continued on last page)



*Lubricating Oil Manifold at Port Arthur:  
Each Pipe Holds a Different Grade of Oil*



**M**ANY places of incredible ugliness and isolation are brought to light when oil is found underground. On the other hand, places as lovely as Frio Canyon are occasionally revealed to a delighted world.

The fact that the interest of various oil concerns has turned to the Frio Canyon country in Texas, has attracted a great deal of attention to the country itself. It is far from improbable that oil derricks may come to grow soon among the tall trees of the canyon and in the high, green pastures where flocks of sheep, like great dun-colored clouds, graze all day long.

Frio Canyon might be a fragment of some remote, lost Eden. Tall cypress trees meet in a delicate embrace across the road that runs along the river for miles. Deep, cool crevices in the cliffs along the river harbor great, green ferns and velvet moss. The sun shining through the overlapping branches of the trees weaves a shadowy pattern of lace upon the white earth, and a southwestern moon at night paints weird, lovely pictures among the shadows of the cliffs and the drooping cypress. Bees hum an endless song of industry as they draw nectar from the alfalfa and the other plants in the canyon country which Frio River has made into a garden. Drowsing in the upland pastures after their flocks are

## FRIO CANYON, A LOST EDEN

a few of the remaining shepherds of the country.

Frio Canyon has not yet been discovered by the panting procession of tourists who overrun the highways every year. It is a little difficult to reach, being slightly removed from the beaten track. But once one has passed the entrance to the canyon, which is a sort of gateway formed by two tall cliffs, there is the feeling of losing the world for a little while and entering Peaceful Valley. One expects a little to hear the piping of Pan in Frio Canyon and darting fawn-colored shadows suggest pointed ears and the sound of sly laughter.

Frio River drops in a diamond-clear shower from the side of a cliff into the canyon, forming a wide, deep stream of icy cold water fifty to seventy-five yards wide. Only occasionally the sun strikes a glint from the crystal surface of the stream. The giant pecan trees and the shielding cypress hover above the river, making a deep, mysterious shade through which the water rushes down to the Nueces River.





*The Oil Scouts Discover  
One of Nature's Beauty  
Spots 'Way Out in Texas*

By SAM ASHBURN

Somewhere, far underground above Frio Canyon, the river is fed by a giant spring. Across from the main Frio is what is known as "dry Frio." This river also gushes out of the rock near the same point where main Frio begins, but dry Frio only runs above ground for about fifteen miles and then abruptly disappears into the earth, emerging, perhaps, at some far-away point to feed another stream, sea-bound.

The village at the entrance to the canyon is named Con-can—for no apparent reason. It consists of a general store and a postoffice. There is a postmaster who has not left the village for fifteen years. He lives in the postoffice, eats and sleeps in the back part and dispenses mail and local gossip in the front. He is an old shepherd who, grown too feeble to watch after his flock, took over the postoffice which is served by a star route and he has been as faithful to his fifty or seventy-five patrons as he ever was to his flock. There are half a dozen houses

in the village and a few ranch and farm houses scattered about over the thirty-mile length of canyon. The nearest railroad is at Uvalde, thirty miles away from the entrance to Frio Canyon. There is only one tourist camp on the main Frio. At this camp one may eat fried chicken, honey and homemade bread and drink buttermilk cooled in the spring, all for fifty cents. And the repast, if one likes, will be served under the shade of cypress trees on one of the out-of-door tables.

Alfalfa farms, sheep and goat raising, and the growing of fruits, vegetables and pecans make life for the people of the canyon country very comfortable. One will always see the sure-footed goats clambering back and forth among the hardy shrubs that grow between the rocks along the cliffs. Much of the mohair that goes to the textile industry is grown in Frio Canyon.

A giant oak tree grows near the store at the entrance to the canyon; it has a limb spread of 125 feet. The first school ever held in Frio Canyon was conducted under this tree. The school term was not long but, no doubt, was very pleasant while it lasted. Recently the store, the residence adjoining, the stock of merchandise *and the tree* sold for five thousand dollars. The tree served as no small inducement to the buyer.





The "Back-Up Boys" as They Left Los Angeles, California

## Seeing America Backward

### TEXACO Products Undergo a Severe Transcontinental Road Test

**I**F you really want to appreciate a transcontinental trip, you ought to drive the entire distance in reverse gear. So say James B. Hargis and Charles Creighton, of St. Louis, who have done just that, using TEXACO products exclusively.

On July 26, Hargis and Creighton backed their Model-A Ford roadster out of Battery Park, New York City, and continued backing up until they reached Los Angeles, whereupon they turned right around and backed back to New York again. They completed the trip on September 7, after covering a distance of 7180 miles in 42 days.

What appears on the surface to be a rather pointless stunt was in reality a particularly difficult test for the new TEXACO Golden Motor Oil "G," especially refined for Ford cars. Although the car was left in a TEXACO service station every night, the engine ran continuously during the entire trip.

The "Back-Up Boys" encountered nearly every possible weather condition, including pelting rains, dry, high altitudes and temperatures which reached 121 degrees Fahrenheit. Across some of the desert stretches there was a continuous wind blowing against the car, and since the latter was traveling backward,

conditions for overheating the engine were ideal. Engineers have estimated that the gear ratio of approximately five to one and the average speed of ten to twelve miles an hour were equivalent to driving the car forward for the same distance at a speed of fifty miles an hour.

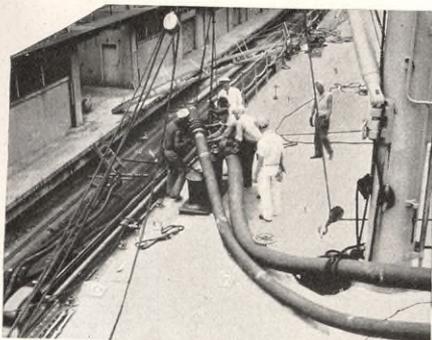
Hargis, 26, an interior decorator, conceived the idea of making a transcontinental trip in reverse gear when he was forced, through a breakdown, to drive backward several miles to his home from a fishing trip. In company with Creighton, 21, an automobile mechanic, he tested out several competitive motor oils but asserts that none proved satisfactory. Exhaustive tests with the new TEXACO Golden Motor Oil demonstrated the superiority of that product and the car was made ready for its trip. All forward gears were removed to insure that

the reverse gear would be used the entire distance. Experts who examined the gear at the end of the trip found it in good condition, with no signs of wear. Motorists were unanimous in agreeing that the trip was one of the most difficult tests for a motor oil ever devised.

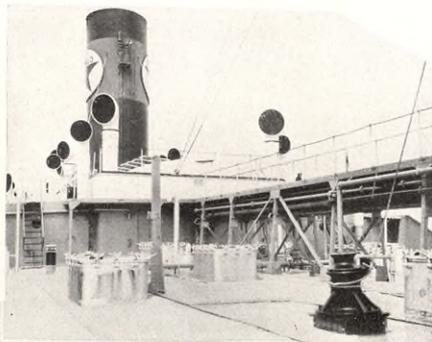


On Arrival in New York—Greeted by "Stu" Hawley

## The TEXACO STAR



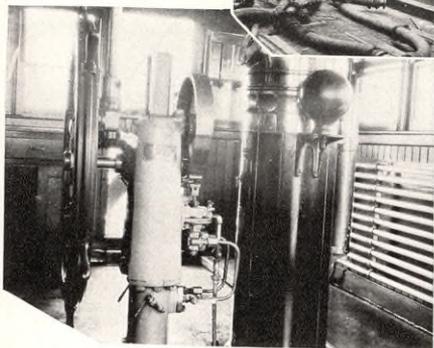
(Above) Coupling the Loading Lines to Pump Out Some of the Australia's Cargo of TEXACO Gasoline



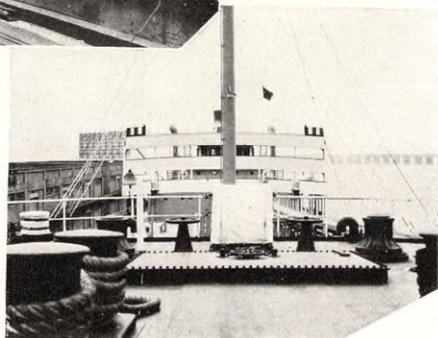
(Above) Looking Toward the Stern and (Left) Swinging the Loading Line into Position on the Terminal Dock



TEXACO STAR PHOTOS



A Privileged Glimpse into the Wheel House of the M. V. Australia



View of the Forward Deck Looking Toward the Tanker's Bridge

## THE AUSTRALIA CALLS AT BAYONNE

THE Motor Vessel *Australia*, owned and operated by The Texas Company, is one of the largest oil tankers afloat. Acquired in 1923, she is a twin-screw vessel, equipped with two Diesel engines, developing 2100 shaft horsepower each, and her capacity is 145,000 barrels of refined products, equivalent to the combined capacities of seven hundred railway tank cars. Her dead weight tonnage

is 13,800 tons, her length overall is 530 feet and her loaded draft is 31 feet.

On the day she called at the Company's Bayonne Terminal, Bayonne, New Jersey, she was carrying a cargo of TEXACO gasoline, about half of which was pumped from her tanks before she headed for Providence, Rhode Island, and Baltimore, Maryland, to discharge the balance of her cargo.

# Big Oil Show Ready for Opening Day



*Portion of Grounds of the Seventh Annual International Petroleum Exposition*

PREPARATIONS for the seventh annual International Petroleum Exposition, which have been going on for nearly a year, were practically completed several weeks ago and the big show is ready for its opening on October 4. This event, attended by oil men from all over the world, is held annually at Tulsa, Oklahoma.

Everything used in the petroleum industry, from a well derrick to a gasoline pump, and embracing the divisions of production, transportation, refining, engineering and marketing, will be on display at the show. In addition the historical exhibits, showing oil industry methods of the past, will have a prominent place.

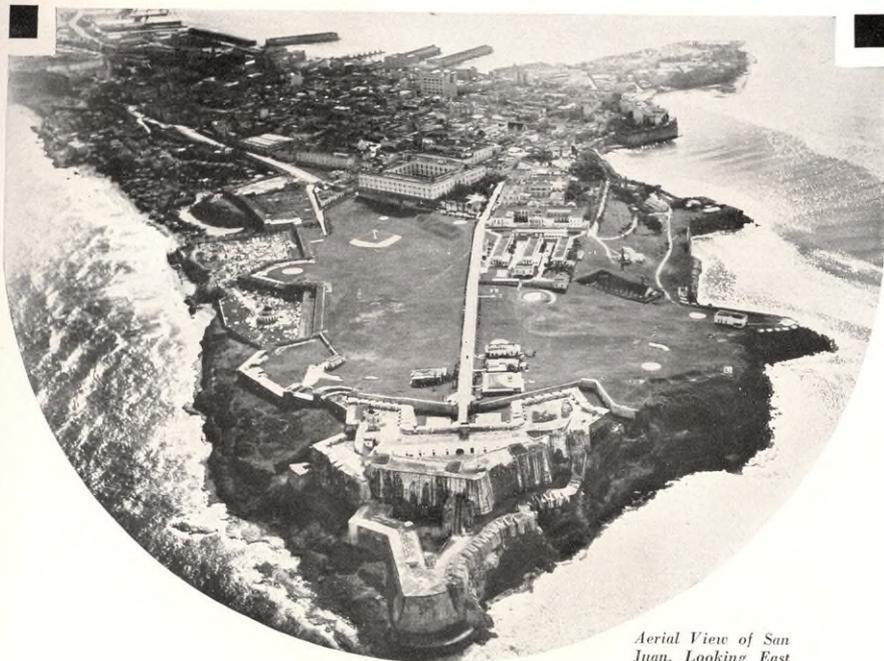
Chief among the innovations for this year's show are two new buildings at the east end of the grounds. These are the Refiners and Marketers Building and the California Building. The former is an extension of the Oklahoma Building, while the latter has been built as an addition to the Texas Building. Each is 240 feet long and sixty feet wide. The Refiners and Marketers Building will be devoted to refinery units, accessories, miniature stills and the latest

types of gasoline pumps and service station equipment. The California Building will contain exhibits of a general nature pertaining to that state.

Improvements on the exposition grounds this year were made at a cost of approximately \$90,000 and include, in addition to the two new buildings, larger parking spaces, new restaurant facilities, telephone equipment, rest rooms and new electrical equipment to the extent of more than a million feet of wiring.

A replica of the Drake well, first oil well ever drilled in this country, will again be on display. This feature, which drew the attention and interest of visitors last year, has been given a permanent and prominent place near the main entrance to the grounds. Nearby will be shown early drilling and power equipment.

Barney E. Horrigan, independent oil operator, will again head the old-timers' committee of the exposition. This committee will give special attention to a plan whereby surplus funds of the oil show will be used for the benefit of needy veterans of the industry.



*Aerial View of San Juan, Looking East*

## Globe Trotting with TEXACO

### XIV—PORTO RICO

By ROBERT B. BUSHBY

Manager, The Texas Company (Porto Rico) Incorporated

ONE of the West Indies; an island about ninety miles long and forty miles wide, located four days by steamer from New York and nine or ten days from southern Europe; neighbor of Santo Domingo and St. Thomas; an island rich in climate and scenic beauty; interesting historically, geologically, industrially and in its present-day merging of Spanish and American customs; the home of approximately 1,400,000 people—this, in brief, is the Island of Porto Rico.

To many a traveler Porto Rico is the Island of Enchantment. Here will be found a climate unsurpassed by that of any other part of the world; summer

throughout the year, but with its heat tempered and controlled by the trade winds that faithfully cover the Island from the East. The mean annual temperature is 76 degrees, Fahrenheit,

with an average of 73 degrees for the coolest month and 79 degrees for the warmest month. The mean annual rainfall is 77.30 inches. The Island abounds with interesting scenic drives over its more than 1500 miles of excellent asphalt roads; beautiful beaches, mountain vistas from roads at altitudes of three thousand feet above sea level, inland jungles, relics of early Indian life and Spanish colonization—



*Ancient Spanish Sentry Box*



(Above) A Typical Porto Rican TEXACO Service Station

these are only a few of the capital assets of Porto Rico that are a joy to the itinerant motorist or traveler. The late President Roosevelt, on traversing the famous Military Road that crosses the Island from Ponce, on the south shore, to San Juan, the capital on the north shore, a lasting tribute

to the engineering skill of the Spanish military engineers who constructed it, very aptly expressed his pride and admiration by referring to Porto Rico as "an American Switzerland".

Porto Rico was discovered by Columbus on November 16, 1493, on his second voyage. It was then inhabited by an Indian race, the Borinquen, undoubtedly sprung from Arawak stock then existent on the South American mainland. Today many characteristics of that early civilization will be found in the Porto Rican *jibaro*, or peasant farmer. The traveler will notice high cheek bones and thick lips—both facial characteristics of the Borinquen ancestor. His daily life, too, will bring to light habits that had their origin in that early period.

The Island, then known to the natives as Borinquen, was taken by Columbus in the name of Spain and was named by him San Juan Bautista, after the Crown Prince of Spain. Fifteen years later came Juan Ponce de León and the work of colonization began. In the course of time the name of the Island was changed to "Puerto Rico" and its principal port or town on the north coast was called San Juan. For more than four hundred years the Island remained



(Left) Needle Workers at Notre Dame School, San Juan

a colony of Spain, but on October 13, 1898, following the Spanish-American War, the Island was ceded to the United States of America. Thus it is today—an insular territory of the United States but with its political and civil life softly blended with the tradition or heritage of its Spanish past. It has been

an interesting and praiseworthy transition and the people of Porto Rico may justly point with pride to it.

The progress of the colony during its four hundred years of Spanish rule was unavoidably slow. It was necessary to attract colonists and to mold an historic race. But it is an interesting fact that when Jamestown and Plymouth, on the mainland of the United States, were settled by the English, the town of San Juan, Puerto Rico, was then a hundred years old. Nor was the rise in the colonization process al-

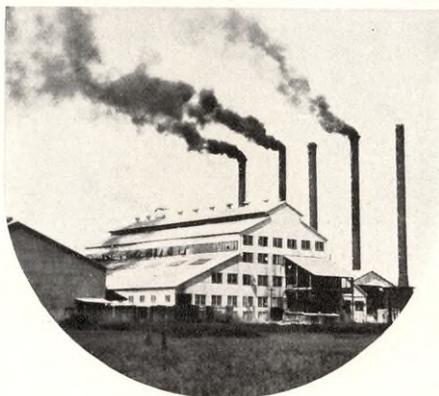
Along the Barranquitas Road



## The TEXACO STAR



(Above) New TEXACO Bulk Station Located at San Juan



(Left) This Sugar Central at Fajardo Uses TEXACO Oils

together peaceful. In the sixteenth, seventeenth and eighteenth centuries the Spanish inhabitants were constantly on guard to defend their island against the aggression of pirates and buccaneers. Porto Rico was then the refuge of treasure ships returning to Spain and fleeing from the French, English and Dutch ships that prowled the Spanish Main. The traveler can visualize much of life as it existed in those days of Morgan, Captain Kidd, Clifford, Cook, Henry and Le Grand. It was as a protection against such raids that the elaborate forts in San Juan known as "El Morro" (1554) and "San Cristobal" (1631) were constructed. But slowly an industrial life was built up, and the Island's sugar, tobacco, coffee, fruit and needlework industries of today had their inception in those early days of Porto Rican colonization.

Porto Rican Tobacco at Cayey

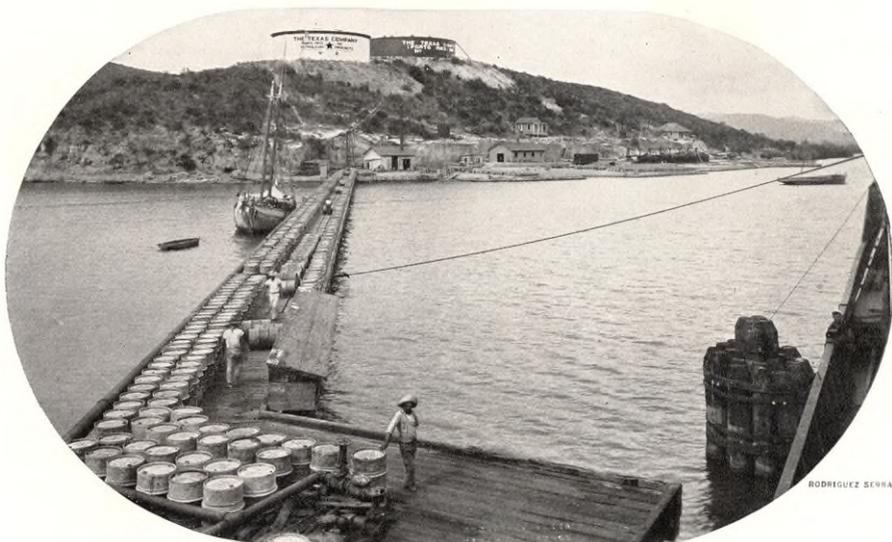


The Island of Porto Rico, being probably the result of volcanic action and uplift, can offer the traveler a varied array of tropical surface conditions; mountain ranges, with a system of excellent roads winding in and out; weathered rock formations of grotesque appearance; soils of varying natures which

obviously determine the crops that are applicable, and many other items of interest. At Coamo Springs, in the interior, is found an interesting hot sulphur spring that enjoys a steady visiting clientele. Other hot springs are also to be found on the Island, although they are of lesser importance.

Industrially, the Island is largely agricultural, with sugar its predominating industry. From the assembly of 41 centrals (mills) the raw sugar is shipped principally to the United States, and this production now exceeds 700,000 tons a year. A few of the centrals operate small refining plants to meet local consumption. Some of the centrals also maintain their own sugar plantations, known as *colonias*, in addition to receiving cane from independent planters, which is ground on the basis of varying participating arrangements. A visit to a central is always of great interest to the traveler. The processes are unique and in Porto Rico one will find them modern and efficient.

Next in importance is the tobacco industry. More than 225,000 acres of land are devoted to this product. The tobacco is of excellent quality and is made by local factories of varying sizes into cigars and



TEXACO Ocean Terminal Located at Guayanilla, P. R.

cigarettes. Appreciable quantities of leaf tobacco are also exported. The district of Cayey, in the highlands, is particularly noted for its production of high grade tobacco.

In years past, the coffee industry has also been of material importance in the industrial life of Porto Rico, more than 150,000 acres of land being used in this production. At present the industry is ineffective due to the havoc caused by the disastrous hurricane of September 1928. Probably it will take at least five years for the industry to recuperate. Porto Rican coffee has long been highly regarded.

The citrus fruit farms also play an important part in Porto Rican industry. Grapefruit, oranges and pineapples of recognized quality are grown and exported; some of the farms operate canning plants to meet the outside demand for prepared fruits. It is a growing industry and offers possibilities for expansion. Bananas and other tropical fruits and vegetables are grown for local consumption.

In Porto Rico, due to the long use to which its soil has been subjected, the science of fertilization is of prime importance to all agricultural industries. The government is rendering material assistance through the efforts of its experimental stations on the Island. Probably in no other given area is the science more extensively practiced. It is an item of great industrial interest.

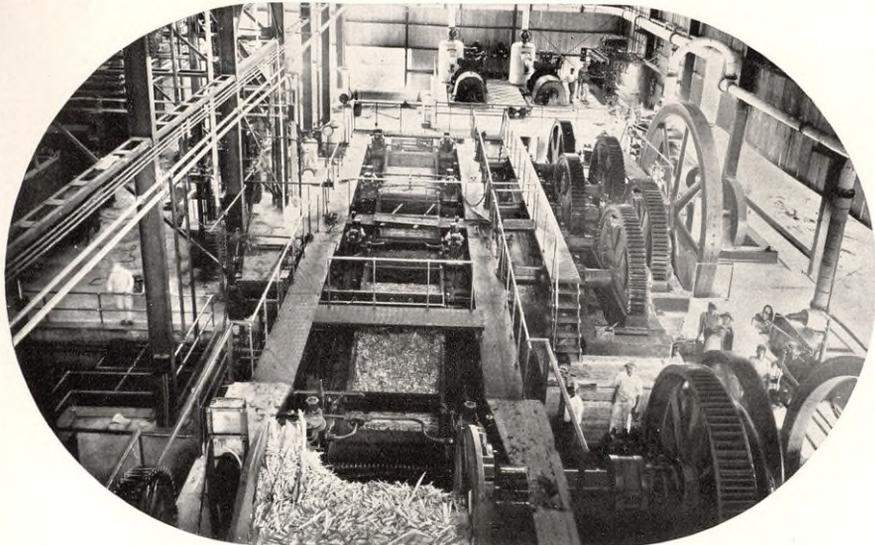
Another industry of importance is needlework manufacture. Porto Rican needlework is a distinct

art and the output meets a large local and export demand. Hundreds of women may be found in various parts of the Island, some working in small shops and others in their small rural cottages, all busy making the beautiful handiwork for which they have gradually become so widely recognized and in which they justly take great pride.

Nor has governmental industry failed to keep abreast of the economic. Mention has already been made of the system of excellent roads that traverse the Island and render the interdependence of the cities and towns an established factor in the economic life of the Island. More than 14,000 motor vehicles (including more than three hundred buses) are daily traveling on these roads and bringing together the more than 65 cities and towns. Porto Rico can also show the traveler an excellent system of public schools, the system culminating in its university, located in Rio Piedras, eight miles from the capital, San Juan.

From the standpoint of transportation in and out of Porto Rico, the traveler is well protected. Modern passenger steamships operate weekly between San Juan and New York, Santo Domingo and Venezuela; adequate service is maintained between San Juan and France, Spain and ports in Texas. In addition, during the winter months the cruise steamships that visit San Juan afford additional communication facilities.

Early in 1929 airmail and passenger service was



*Interior of a Sugar Mill Showing Grinding Process*

inaugurated between San Juan and Miami, Florida, with stops on the way at Santo Domingo, Haiti and points in Cuba, and an excellent airport at San Juan was subsequently constructed. Three large cabin planes now traverse the route to and from San Juan weekly, and mail and passenger service is maintained between San Juan, St. Thomas (Virgin Islands) and South America by way of the Leeward and Windward Islands to Trinidad and thence to Dutch Guiana. One amphibian cabin plane makes the round trip weekly. Porto Rico is adequately provided with radio and cable communication.

The railroad in Porto Rico is likewise a well developed facility; today the Island is traversed by approximately one thousand miles of railway lines, including the private lines operated by the sugar centrals. San Juan can show the traveler a well managed and equipped electric street railway system.

TEXACO products were first marketed in Porto Rico in 1911 and on December 3, 1919 there was incorporated a local organization known as The Texas Company (Porto Rico) Incorporated. This Company is now well developed in marketing facilities; a terminal is operated at Guayanilla on the South coast for the storage of bulk products that are received by tankers from The Texas Company's refinery at Port Arthur, Texas. This terminal also supplies Jamaica, Haiti, and Santo Domingo, with bulk products, which are forwarded by a five thousand barrel capacity tanker of shallow draft. In addition

The Texas Company (Porto Rico) Incorporated operates a bulk station, general office and subsidiary warehouse in San Juan and maintains nine agencies in the various Island districts as well as two sub-agencies in St. Thomas and St. Croix (Virgin Islands) each of which is provided with a suitable warehouse and office. The Company is likewise equipped with a fleet of tank cars for the delivery of fuel oil, and operates tank and stake trucks for the transportation of gasoline and other products. Further, in line with the general development of the gasoline service station as an item in the motoring life of the Island, the Company will now be found marketing TEXACO motor products through a series of representative service stations located at convenient points throughout the Island so that the Red Star with the Green T is now followed in Porto Rico just as it is in so many other parts of the world.

In the field of industrial lubrication, found principally in the sugar centrals on the Island, TEXACO lubricants find increasing favor and these products will be found giving complete satisfaction in a very gratifying number of those centrals. The farm tractor has now come into more general use in Porto Rico and TEXACO tractor oils are thereby increasing their circle of friends and satisfied users. In the lesser industrial field, railways and machine shops, TEXACO lubricants enjoy a very representative following. It is the aim of The Texas Company (Porto Rico) Incorporated to maintain its level of prestige.

## OUR WHO'S WHO



**ALLEN F. BREWER**, who wrote the article on lubrication which appears in this issue of *THE TEXACO STAR* hails from 'way down East, having been born in East Swansey, New Hampshire. He graduated from Massachusetts Institute of Technology in 1914 and entered business life as a mechanical engineer for the State Board of Public Utilities in New Jersey. He later entered the United States Navy Steam Engineering School of Stevens Institute of Technology, graduated as an ensign and saw war service overseas. Upon his discharge from the Navy, Mr. Brewer was employed by The Texas Company as a fuel oil engineer in the Export Department and spent two and one-half years at Port Arthur, Texas. At the present time he is Engineer for the Technical Division of the Refining Department with headquarters at New York. He is a member of the American Society of Mechanical Engineers and his hobby is fishing.

**FRANK L. WALLACE**, whose article on petroleum coke appears in this issue of *THE TEXACO STAR*, was born in the Hoosier State of Indiana. He attended Indiana's schools and graduated in mechanical engineering at Purdue University. Alternate years between school attendance were spent in railway engineering and construction work. During 1917 and 1918 he served in the army and later was employed by the Federal Government in levee construction on the lower Mississippi River. He joined The Texas Company in 1919 at Port Arthur, Texas, as a boiler washer. He is now second assistant superintendent of the Company's Port Arthur Works.



**MARION A. SPEER**, who is responsible for the article in this issue of *THE TEXACO STAR* on the development of the Huntington Beach field, graduated from the Colorado School of Mines in 1908. For two years he supervised the construction of mining machinery but was lured to the oil business by a wildcat well which blew in in the Browning Basin field in Wyoming. Through his connections with the Petroleum Midway and the

## PETROLEUM COKE

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ignition arches in the furnace. The furnace design, size and type of pulverizing and the arrangement of the burners bear the same relation to the overall efficiency as is experienced with coal or other solid fuel.

Inasmuch as 75 tons of petroleum coke are equivalent in heating value to one hundred tons of average run of mine coal, marked savings may be realized in transportation, storage and handling. Moreover, due to its low ash content, slagging difficulties and the expense of handling and disposal of ash are practically eliminated. Lastly, the fact that pulverized coal burning equipment handles petroleum coke with equal efficiency makes it possible to interchange the fuels with no additional expense.

## LUBRICATION

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the steel, textile, rubber or other industries. Suffice it to say that modern machinery is practically as sensitive as the human body to those details which tend to impede its freedom of motion. The secret of its efficiency is therefore the reduction of friction, by the use of proper lubricants. In fact productive industry would practically cease were our supply of mineral lubricating oils to be unexpectedly cut off.

The Texas Company began the manufacture and distribution of lubricating oils in 1906. Today there is a TEXACO lubricant suitable for every purpose and their market is worldwide. These oils are refined according to specifications compiled by trained lubricating engineers and are subjected to exacting tests both in the laboratory and in actual use. At the present time TEXACO industrial and railroad lubricants, motor oils, marine and airplane oils are used in factories, power plants, motor cars, ships and airplanes throughout the world and on approximately one-third of the total railroad mileage of the United States.

California Petroleum Corporation he is in point of service the eldest employe of The Texas Company (California) at Huntington Beach, where he is employed as a pumper. His hobby is nature study.

## IMPROVEMENT

**T**HE petroleum industry, statistically speaking, is in the most healthy position it has attained so far this year, according to a survey by the Standard Statistics Company, of New York. Crude oil production, says the survey, has reached its lowest point since 1923 and with proration agreements in force throughout the country, crude stocks are being gradually reduced.

Heavy withdrawals from gasoline storage are under way, the statistics company finds, and crude runs to refineries have been materially reduced. The report adds that "while the dangers surrounding the voluntary nature of production control are still present, the majority opinion in the industry points to continued adequate restriction during the near future."

In that phrase, "the voluntary nature of production control," lies the nub of the whole situation. Present state regulations regarding conservation leave much to be desired and it is only by voluntary action on the part of producers that true conservation is possible. The selfish interests of those few who oppose the spirit of the conservation movement should not be permitted to interfere, economically or otherwise, with those who are honestly trying to combat the evil of overproduction.

## MOSQUITOES

*(Continued from page 8)*

dred. This includes sanitary engineers, surveyors, tank truck operators and ditch diggers.

In states adjacent to New York the mosquito control work is carried on by state or county commissions. The State of New Jersey in particular has done wonderful work in mosquito control and is fast making the noted "Jersey skeeter" a creature of mythology. In addition to the work of the Federal Government, certain private corporations have assisted in stamping out the pest. The Texas Company carried on extensive mosquito control work in Port Arthur, Texas, on the property where now stands its great refinery and terminal. There is no place for the mosquito in modern life; as a pest he might be tolerated, but as a carrier of disease he must be wiped out, and petroleum is doing its considerable share in the good work.



SUGGESTIVE OF MOORISH ARCHITECTURE,  
THIS TEXACO SUPER-SERVICE STATION  
IS LOCATED AT THE CORNER OF PARK  
AND FRANKLIN STREETS, SAN FRANCISCO





“I’ll be back  
*in half an hour*”

**P**PROMPT, courteous service, in addition to the recognized superiority of Texaco products, accounts for the woman driver’s preference for Texaco Stations. Here, thanks to skilled attendants and modern equipment, crankcases can be drained and refilled, transmission, differential, and chassis checked for lubrication in less than 30 minutes.

Today, have gritty, “summer-worn” motor oil drained from your crankcase. Have it refilled with the new Texaco.

This crack-proof, longer-lasting motor oil will give you better daily performance and make your car last longer. Let the Texaco Service man grease the chassis and remove the annoying squeaks and rattles. Have him go over the differential and transmission. It can all be done while you are shopping, and what a difference it will make in the feel, the comfort, the life of your car.

THE TEXAS COMPANY  
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**THE NEW TEXACO MOTOR OIL**

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LONGER—LASTING . . . “CRACK—PROOF”

